Toying with junk

Deccan Herald, Thursday, June 03, 2004

Toys can be made out of discarded material and are not just playthings but can teach children a lot of important things about science.

After graduating from the prestigious Indian Institute of Technology (IIT) Kanpur and getting a plum job at one of the top most engineering companies, not many people would quit to spend the rest of life in making toys out of all sorts of discarded material. But Arvind Gupta preferred to take that decision and still has no regrets.

And, in the last two decades Gupta has a made a niche for himself by creating toys out of thrown away refills of ball point pens, rejected bicycle tubes, all types of papers, worn out bathroom slippers, pins, empty tetra-packs, film role cans, cold drink straws, old CDs and useless floppies and innumerable other rejected material found in any household.

What makes them unique is that these toys are not mere playthings, but each of them helps a kid to understand nuances of scientific theories ranging from aerodynamics and electromagnetism to acoustic principles. “Toys give an hands-on attractive means for the kids to learn fundamentals of science,” Mr Gupta told Deccan Herald in Pune.

The former Telco engineer detests the way science is being taught in most of the schools. “Most of the children cannot relate to science because of the way the subject is being taught. Children learn by doing. In their free moments they are always tinkering, pottering, playing and messing around with whatever they can lay their hands on. It is during play that children learn a lot of important things about science,” he observed.

This passion of telling the children a thing or two about science, has brought Mr Gupta to Pune where he has been given the responsibility of what can be called India’s first interactive science museum with the backing from Inter University Centre for Astronomy and Astrophysics (IUCAA) and its eminent founder Dr Jayant Narlikar. Maharashtra-based Pula Deshpande trust has contributed Rs 25 lakh for the project. The museum is likely to be operational by June.

With impressive structures, building and models, most of the Indian science museums including those created by National Council of Science Museum barely offer any chance to the kids to learn nuances and romances of science.

The models are conceptualised lock, stock and barrel on similar western models resulting into a complete lack of any Indian perspective. They are high on bulk but low on content. Then there would be a security guard to protect those structures and models and the mere sight of a security guard is enough to make the kids shy away from science, he said.

On the contrary, the museum conceived by the Toy-maker (as Mr Gupta prefers to call himself and described in a recently released title on the IITians), would consists of two room-full of large boxes containing all sorts of household junk. The kids will be asked to pick up whatever material they like from those boxes and make toys out of them. Of course, Mr Gupta with his knowledge of making almost 200 toys out of these junk would be there to help them out.

So what type of toys will the kids be making? A hand pump made out of an empty plastic film roll can, a

bicycle spoke and a soft drink straw; or an abacus made from a torn away bathroom slipper and some broken pencils (in fact the same slipper and pencils can double up as a tool to teach light's convergence and divergence properties) or a paper bird that a kid can rotate using a piece of string or a DC motor made out of a battery and some commonly available metal strips.

Mr Gupta who had quit Telco in 1978 to work in the pioneering Hoshangabad science and technology programme (HSTP), knows the ways to make hundreds of toys out of these so-called junk.

A piece of log with notches at its tip and a broom-stick is another of his top favourite. Rubbing the notches with the broom stick will produce sound in accordance with acoustic principles.

"It looks simple but fairly complicated science has gone into it. How deep the notches should be? How far the notches should be? Can it rub with ball pen refill or with a finger. And while trying out these tricks the children will learn about acoustics," he explained with bubbling enthusiasm.

Without going through pages of complicated physics and class-room experiments, Mr Gupta has a novel way of telling the basics of acoustic vibrations. Take a cold drink straw, blow it and slice the straw with a scissors. As the length of the straw diminishes, the sound that emanates from blowing changes as per an octave. "This is a simple way to dovetail a toy with scientific principles. We never knew it because we never looked at our own reality," he lamented.

For the IITian, lessons were learnt during his HSTP days when Mr Gupta encouraged by a fellow IITian and educationist Anil Sadgopal joined the programme which aimed to teach students between standard VI to VII science in a Madhya Pradesh district in a hands-on way. By the time HSTP was forcibly closed down by the Digvijay Singh government – ignoring the protests from scientists and educationists from all over the world – a few years back, HSTP is known all over the world as an unique experiment.

The HSTP has taught the toy maker that children do not need fancy laboratories and expensive equipment for doing science.. "There is much which can be done using throwaway things found at home. Only when children use ordinary things, they realise the relevance of science in everyday life", he summed up.

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LEARNING SCIENCE

*Arvind Gupta graduated from IIT, Kanpur and has acquired the skill of making toys out of discarded material like refills of ball point pens, bicycle tubes, CDs and floppies.

*Each of his toys helps the kids to understand the nuances of scientific theories ranging from aerodynamics and electromagnetism to acoustic principles.

*Arvind Gupta prefers to be called a toy maker and has conceptualised a museum in which household junk in large boxes will be kept. The kids can pick up whatever material they like from these boxes and make toys out of them. That way, he thinks the kids can learn science also.